

GAO

Testimony

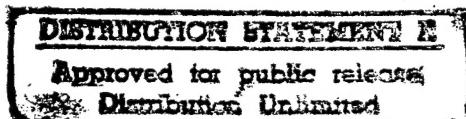
Before the Subcommittee on Defense,  
Committee on Appropriations,  
U.S. Senate

For Release on Delivery  
Expected at  
10:00 a.m., EDT  
Wednesday,  
May 7, 1997

DEFENSE DEPOT  
MAINTENANCE

Challenges Facing DOD in  
Managing Working Capital  
Funds

Statement of Henry L. Hinton, Jr., Assistant Comptroller  
General, National Security and International Affairs  
Division



DTIC QUALITY INSPECTED 4

19970723 086

---

Mr. Chairman and Members of the Subcommittee:

We are pleased to be here today to discuss financial management and logistics management issues relating to the effectiveness and efficiency of the Department of Defense's (DOD) operations. Specifically, we will focus on the operations of DOD's working capital funds, which collect and disburse over \$65 billion annually, and on DOD's management of the \$13 billion depot maintenance program. It is important to note that these areas fall within defense financial management and infrastructure activities, 2 of the 24 areas we identified as high-risk areas within the federal government.<sup>1</sup>

These issues have significant impact on the efficiency and effectiveness of how DOD spends its operations and maintenance funds. DOD has consistently experienced losses in the operations of various working capital funds, including the depot maintenance activity group, and has had to request additional funding to support their operations. This issue has been an area of concern to this subcommittee and other congressional committees. Before we get into specifics, let's briefly summarize our key points.

---

## Working Capital Funds' Cash Management and Operations Issues

Our work on working capital funds cash management and operations shows the following:

- To date, the working capital funds have not yet accomplished the goal of operating on a break-even basis, and DOD estimates the funds will have an accumulated operating loss of about \$1.7 billion at the end of fiscal year 1997. However, we believe that the funds have achieved a measure of success because the services are doing a better job of identifying the costs of doing business and including those costs in the prices charged customers. Setting prices to recover more of the costs of providing goods and services to customers gives managers a window into the costs of DOD support operations—including costs for direct labor, material, overhead, and contracts. With a more complete cost picture, managers can account for past activities, manage current operations, and assess progress toward planned objectives. Further, more accurate identification of costs enables those responsible for providing oversight to make more informed policy decisions by highlighting the cost associated with those decisions.

---

<sup>1</sup>Defense Financial Management (GAO/HR-97-3, Feb. 1997) and Defense Infrastructure Management (GAO/HR-97-7, Feb. 1997). In 1990, GAO began a special effort to report on the federal program areas its work identified as high risk because of vulnerabilities to waste, fraud, abuse, and mismanagement.

---

- When the Defense Business Operations Fund was established in 1991, DOD consolidated the cash balances of the nine industrial and stock funds into a single account that was managed centrally by the Office of the Secretary of Defense (Comptroller). In February 1995, DOD devolved the responsibility for cash management to the military services and DOD components. We agree with DOD's decision to place the responsibility for managing the working capital funds' cash at the military service and DOD component level because it makes each individual DOD component directly accountable for its respective cash balance as well as their decisions that impact cash. Each DOD component now has an incentive to more accurately price the goods and services that its working capital fund charges customers since inaccurate prices could lead to not having enough cash to cover day-to-day operating expenses.
- Since 1993, the working capital funds have had a cash shortage. To ensure that the cash balances remained positive, the funds have advance billed their customers. While the three services have liquidated \$3.6 billion of outstanding advance billings from February 1995 to January 1997, the outstanding advance billing balance is still \$1.6 billion. Further, the Navy and Air Force advance billed their customers about \$2.9 billion during calendar year 1996 to ensure that their cash balances remained positive.
- Our analysis of the fiscal year 1998 prices for five business areas indicates that they are probably too low to recover expected fiscal year 1998 operating costs and/or recover prior year losses by over \$300 million.

---

## Challenges Facing DOD in Improving the Cost-Effectiveness of Depot Maintenance Operations

Various factors contribute to inefficiencies in DOD's management of depot maintenance activities.

- Excess capacity—which is currently about 40 percent in DOD's depot maintenance system—is a significant contributor toward the inefficiency and high cost of DOD's depot maintenance program and is generating significant losses in the depot maintenance activity group of the services' working capital funds. The Navy has made the greatest progress in dealing with excess capacity through its implementation of base realignment and closure (BRAC) recommendations. Through consolidations, interservicing actions, and outsourcing some noncore workloads, the Navy expects to reduce its operating rate by about \$10 per hour. Based on a forecast of 13 million direct labor hours for fiscal year 1999, the Navy expects to produce a savings of about \$130 million. However, the Army and the Air Force's plans for implementing BRAC recommendations will do little to reduce excess capacity and will likely result in increased depot maintenance prices.

---

- DOD has made overly optimistic assumptions about cost savings that can be achieved from outsourcing depot maintenance activities. When outsourcing results in increasing, rather than decreasing costs, expected depot maintenance savings will not be realized. To the extent projected savings were budgeted, losses will occur. For example, privatization-in-place of the Aerospace Guidance and Metrology Center was justified based on achieving savings. However, the Air Force projects that for 1997, costs in the privatized facility will be \$9 million to \$32 million more than the cost of the same work before privatization. Similarly, the Air Force is also projecting savings from planned competitions of workloads at two closing Air Logistics Centers. If the savings from these competitions are not achieved, a similar situation will occur.
- Material cost increases are generating losses for the depot maintenance capital fund. Material costs represent about 40 percent of the Air Force depot maintenance costs and during the first half of fiscal year 1997, material costs for Air Force depots have been about \$32.7 million, or 5.4 percent higher than planned. Our work also shows that weaknesses in DOD's inventory management system, such as inadequate visibility over items and purchasing of unneeded stocks, have contributed to rising material costs. In addition, inadequate control of government-furnished material to contractors has also led to losses in contract depot maintenance. For example, in April 1996, the Air Force Audit Agency found problems at Warner Robins Air Logistics Center with government-furnished property financial statement balances misstated by up to \$2.3 billion.

In conclusion, the inefficient operation of depot maintenance activities results in a reduction of the military services' purchasing power through their operations and maintenance funds. Stated another way, more operations and maintenance funds will be required to perform the same level of maintenance. Depot maintenance privatization should be approached carefully, allowing for evaluation of economic, readiness, and statutory requirements that surround individual workloads. If not effectively managed, privatizing depot maintenance activities, including the downsizing of the remaining DOD depot infrastructure, could exacerbate existing capacity problems and the inefficiencies inherent in underutilization of depot maintenance capacity.

In addition, other factors also impact the cost-effectiveness of depot maintenance operations. These include such things as inventory management practices, repair processes, and readiness requirements. We

---

have encouraged DOD to aggressively seek new management practices to meet these challenges. To their credit, each of the military services have programs underway to improve depot maintenance and other logistics activities. While it is too early to assess the results of these programs, we believe they are addressing several key problems, such as the reduction of repair cycle time.

In closing, it is important to note that reducing depot maintenance cost and improving depot maintenance efficiency are complex and challenging tasks that are compounded by force structure downsizing. We have presented some of the key factors that must be addressed and continue to believe DOD should develop an overall plan for improving depot maintenance efficiency and effectiveness that clearly defines how it will deal with this set of complex issues.

---

Mr. Chairman, this completes the summary of issues contained in our statement. Mr. Brock and Ms. Denman, as requested, will now provide more details on these issues.



# Working Capital Cash and Operations Management Issues

---

The Department of Defense (DOD) established the Defense Business Operating Fund (DBOF) in 1991 in an attempt to fundamentally alter the way DOD managed its resources by fostering a more business-like culture within selected Defense operations, which include depot maintenance, transportation, supply management, and finance and accounting. DBOF consolidated the nine existing industrial and stock funds operated by the military services and DOD, as well as the Defense Finance and Accounting Service, the Defense Industrial Plant Equipment Service, the Defense Commissary Agency, the Defense Reutilization and Marketing Service, and the Defense Technical Information Service into a single financial structure. The military services and DOD components continue to be responsible for managing and operating business activities within the financial structure.

On December 11, 1996, the Under Secretary of Defense (Comptroller) reorganized DBOF and created four working capital funds: Army, Navy, Air Force, and Defense-wide. This was done in order to clearly establish the military services and DOD components responsibilities for managing the functional and financial aspects of their respective business areas. The recently established working capital funds continue to operate the same way they did under DBOF.

The primary goal of DBOF and the recently established working capital funds is to focus the attention of all levels of management on the total costs of carrying out certain critical DOD business operations and the management of those costs in order to encourage support organizations, such as depot maintenance facilities, to provide quality goods and services at the lowest costs. Focusing attention on costs is important, given the size of the working capital funds. For fiscal year 1998, the four funds are expected to generate about \$69 billion in revenue and employ about 220,000 civilians and 24,000 military personnel.

The working capital funds are supposed to generate sufficient revenues to recover expenses incurred in their operations and are expected to operate on a break-even basis over time. However, setting prices to ensure that the funds do break even is a complex and difficult task. DOD policy requires working capital fund business areas to establish prices prior to the start of each fiscal year and to apply these predetermined (stabilized or standard) prices to most orders and requisitions received during the year. The process that the business areas use to develop their stabilized prices begins as early as 2 years before the prices go into effect, with each business area developing workload projections for the budget year. After a business area estimates its workload based on customer input, it (1) uses

---

**Appendix I**  
**Working Capital Cash and Operations**  
**Management Issues**

---

productivity projections to estimate how many people it will need to accomplish its work; (2) prepares a budget that identifies the labor, material, and other expected costs; and (3) develops prices, that when applied to the projected workload, should allow it to recover operating costs from its customers. Because sales prices are based on expected rather than actual costs and workloads, higher-than-expected costs or lower-than-expected customer demand for goods and services can cause the business areas to incur losses. Conversely, lower-than-expected costs or higher-than expected workloads can result in profits.

To date, the working capital funds have not yet accomplished their goal of operating on a break-even basis and DOD estimates that they will have an accumulated operating loss of \$1.7 billion at the end of fiscal year 1997. However, we believe that the funds have achieved a measure of success because they are doing a better job of identifying the costs of doing business and including those costs in the prices charged customers. This provides managers and decisionmakers two important benefits. First, setting prices to recover more of the costs of providing goods and services to customers gives DOD managers a window into the costs of Defense support operations—including costs for direct labor, material, overhead, and contracts. With a more complete cost picture, managers can account for past activities, manage current operations, and assess progress toward planned objectives. Second, more accurate identification of costs enables those responsible for providing oversight to make more informed policy decisions by highlighting the cost associated with those decisions.

Over the last several years, various congressional Defense oversight and appropriations committees have expressed concern with the management and operations of the funds. To address these concerns, DOD was required to conduct a study of its working capital funds as directed in the National Defense Authorization Act for Fiscal Year 1997. Not later than September 30, 1997, the Secretary of Defense is required to submit to the Congress a plan to improve the management and performance of the industrial, commercial, and support type activities that are currently managed in the working capital funds. We are hopeful that DOD will use this plan as a mechanism to continue to strengthen its commitment to improving the management and operations of the working capital funds as well as identifying the total costs of providing goods and services to customers and including those costs in the prices charged customers.

## **Working Capital Fund Cash Management**

Since 1993, the working capital funds have had a cash shortage. To address this problem, DOD has taken two actions. First, in February 1995, DOD devolved the responsibility for cash management to the military services and the DOD components to better align accountability and responsibility for management. Second, to ensure that the cash balance remains positive, the working capital funds have advance billed their customers since 1993.

### **The Importance of Cash for Working Capital Funds**

Cash plays an extremely important role for DOD's working capital funds since they collect and disburse over \$65 billion annually. Cash generated from the sale of goods and services is the primary means by which the working capital funds maintain an adequate level of cash to pay bills. Where the cash balances start each year depends on the outcome of many decisions made during the budget process with regard to (1) projecting workload, (2) estimating costs, and (3) setting prices to recover the estimated full cost of the goods and services. During the execution of the budget, they operate much like a checking account: collections increase the funds' account balances and disbursements (such as salaries and purchases of inventory) reduce the account balances. To the extent that the decisions made during the budget process are reasonably accurate, the funds' cash balances should fall between the minimum and maximum amount required by DOD. However, if the decisions are not accurate, the funds could have too much or not enough cash.

DOD's policy requires the funds to maintain cash levels to cover 7 to 10 days of operational costs and 4 to 6 months of capital asset disbursements, which is about \$2.3 billion to \$3.4 billion for the four funds. If the level of cash becomes low and there is a possibility of incurring an Antideficiency Act<sup>1</sup> violation, immediate actions will be taken to resolve the cash shortages by advance billing customers.

Before DBOF was established, each industrial and stock fund had a separate cash balance and managers were responsible for ensuring sufficient cash was available to cover fluctuations in collections and disbursements that occurred from one month to another. When DBOF was implemented, DOD consolidated the cash balances of the nine industrial and stock funds into a single account that was managed centrally by the Office of the Secretary of Defense (OSD) (Comptroller). OSD centrally managed DBOF's cash for about 3 years. In February 1995, DOD devolved responsibility for cash

---

<sup>1</sup>The Antideficiency Act, 31 U.S.C. 1341(a)(1), 1517, provides that no officer or employee of the government shall make or authorize an expenditure or obligation exceeding the amount of an appropriation of funds available for the expenditure or obligation.

management as well as Antideficiency Act responsibilities to the military services and the DOD components.

---

**Our Views on DOD's  
Decision to Devolve the  
Cash Management  
Responsibility**

We agree with DOD's decision to place the responsibility for managing the working capital funds' cash at the military service and defense agency level and to likewise devolve the Antideficiency Act responsibility. In our view, decentralized cash management should result in better cash management and more responsible business decisions.

According to DOD officials, the cash management responsibility was devolved to the Army, the Navy, the Air Force, and the defense agencies to better align accountability and responsibility for managing cash. DOD pointed out that the operational control of actions taken by each fund activity, which results in cash disbursements and collections, always has resided and continues to reside with the individual DOD components.

We believe that there are a number of benefits associated with the decentralization of cash management responsibilities. The decentralization makes each individual DOD component directly accountable for its respective cash balance as well as their decisions that impact cash, including any violation of the Antideficiency Act. One DOD component cannot spend money generated by another DOD component. When cash management was centralized, DOD did not have reports that showed the cash balances for the individual DOD components—the reports only provided information on (1) DBOF's overall cash balance and (2) collection and disbursement data for each of the DOD components. With the decentralization of cash management, the Department of the Treasury provides DOD with a cash balance for each of the five DOD components.

There are still other advantages associated with the decentralization of cash management:

- Each DOD component now has an incentive to more accurately price the goods and services that its working capital fund charges customers since inaccurate prices could lead to not having enough cash to cover day-to-day operating expenses.
- The management of cash is closer to where cash decisions are made—the business area and the activity level.
- OSD and the DOD components have started working more as a team to resolve cash problems. Under the centralization of cash, there was less incentive for the DOD components to respond to cash problems since OSD

was responsible for cash and there was only one cash balance. When the DOD components became responsible for their individual cash balances, they raised more questions on the accuracy and timeliness of the information on collections and disbursements. Such increased attention should help improve the accuracy of collection and disbursement data reported in the working capital funds' financial statements, which are prepared under the Chief Financial Officers Act of 1990.

---

**DOD Has Advance Billed Customers to Alleviate Cash Shortage**

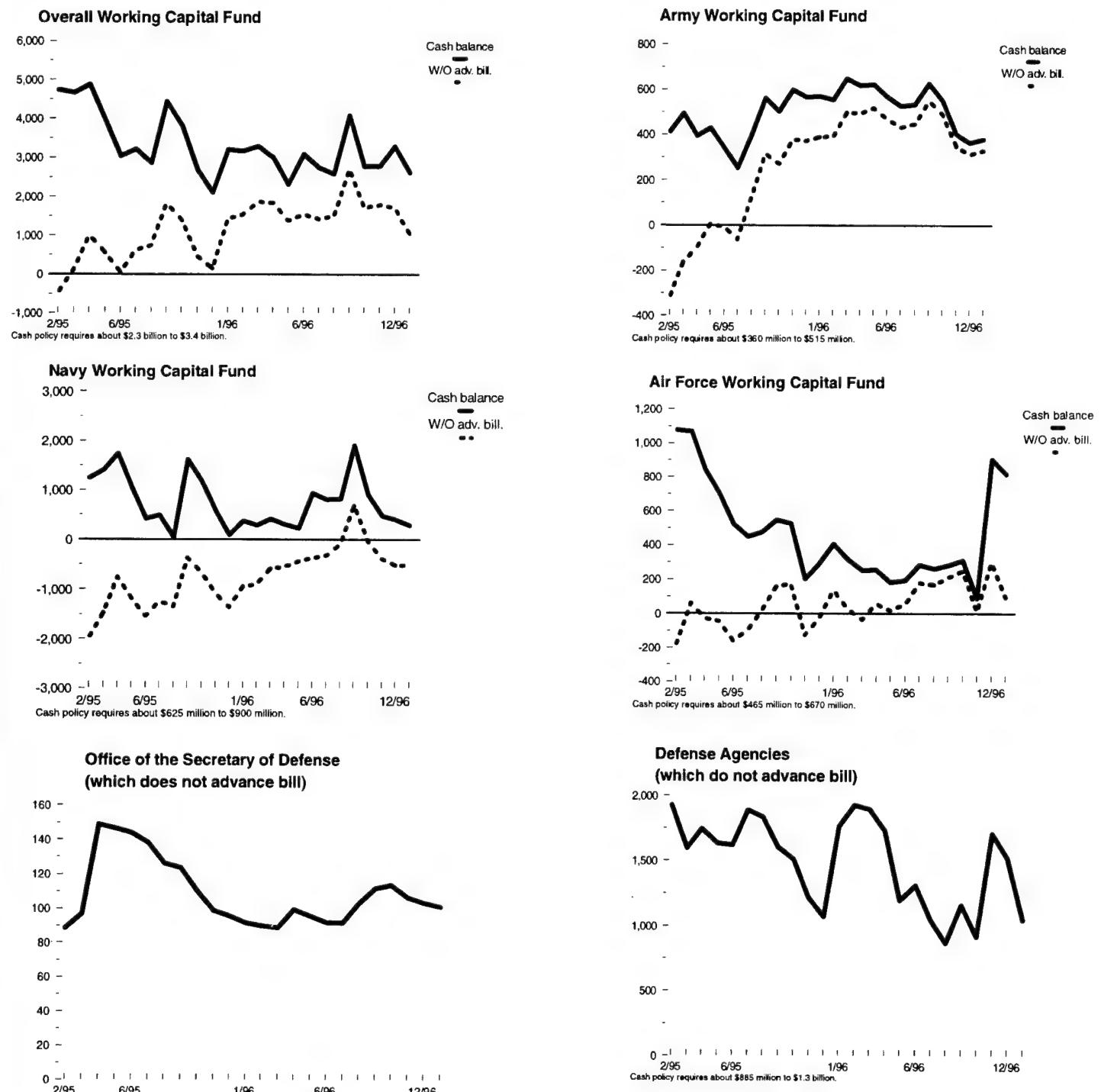
Since 1993—with the transfer of \$5.5 billion from DBOF as required by the National Defense Authorization Act for Fiscal Year 1993—the funds have been advance billing customers because they have not been able to generate enough cash to pay their bills. In July 1994, the Comptroller of Defense stopped the advance billing at all activities except for the Naval shipyards and research and development activities. Although these activities had been tentatively scheduled to stop advance billing in January 1995, this did not occur.

DOD officials informed us that when the responsibility for cash management was returned to the DOD components in February 1995, the amount of cash returned to the services was not sufficient to cover outstanding DBOF liabilities. DBOF's financial reports indicate that this was the case, with each service facing cash shortages. Therefore, according to DOD, it was necessary for the military services to continue to advance bill customers so that their cash portion of DBOF would not go negative.

Since 1995, the military services have made some progress in liquidating (working off) their outstanding advance billing balances. However, the Navy and the Air Force had to advance bill customers again during calendar year 1996 to ensure that their cash balances remained positive. Specifically, the Navy advance billed customers about \$1.7 billion and the Air Force advance billed customers \$1.2 billion during calendar 1996. Further, the Navy had advance billed their customers \$100 million in February 1997. The following figures show the reported (1) cash balances for the Army, the Navy, the Air Force, OSD, and the defense agencies portion of the funds and the (2) cash balances for these components if they did not advance bill their customers from February 1995—when DOD returned the responsibility for cash to these five DOD components—through January 1997.

**Appendix I**  
**Working Capital Cash and Operations**  
**Management Issues**

**Figure I.1: Working Capital Fund Cash Balances** (Dollars in millions)



---

**Appendix I**  
**Working Capital Cash and Operations**  
**Management Issues**

---

Note to above figures: We did not independently verify the financial information shown in the figures, which was taken from DOD and Treasury reports.

As shown in figure I.1, the Army, the Navy, and the Air Force would have had negative cash balances when they received the responsibility for cash in February 1995 had they not advance billed customers. The figures also show that

- the three services have liquidated \$3.6 billion of outstanding advance billings from February 1995 through January 1997;
- as of January 1997, the outstanding advance billing balance was \$1.6 billion;
- the Army has liquidated almost all of its outstanding advance billing balance;
- the Navy's cash balance would have been negative for most of the time period from February 1995 through January 1997 if it had not advance billed customers; and
- the Air Force liquidated most of its outstanding advance billing balance until it needed to advance bill customers over a billion dollars in December 1996 to ensure that its cash balance would remain positive.

According to Army and Air Force officials, they plan to liquidate all their outstanding advance billing balances by the end of fiscal year 1998. Navy officials informed us that they now plan to liquidate the Navy's outstanding advance billing balance by the end of fiscal year 1999.

---

**Cash Outlook for Fiscal Years 1997 and 1998**

DOD's cash plans, dated January/February 1997, show that the working capital funds will disburse about \$2.3 billion more than they collect during fiscal year 1997. To offset most of the cash drain that DOD expects to occur during fiscal year 1997, DOD plans to increase fiscal year 1998 prices to recoup losses and generate cash. DOD plans also show that it expects to collect about \$2.2 billion more than it disburses during fiscal year 1998. This information is summarized as follows.

---

**Appendix I**  
**Working Capital Cash and Operations**  
**Management Issues**

**Table I.2: DOD's Working Capital Fund Annual Cash Plans Dated January/February 1997**

<b>Component</b>	<b>Dollars in millions</b>	
	<b>Estimated fiscal year 1997 collections less disbursements</b>	<b>Estimated fiscal year 1998 collections less disbursements</b>
Army	(\$173.4)	\$27.2
Navy	(1,427.7)	984.5
Air Force	(154.5)	493.4 <sup>a</sup>
Defense Agencies	(511.0)	669.4
<b>Total</b>	<b>\$2,266.6</b>	<b>\$2,174.5</b>

<sup>a</sup>Air Force fiscal year 1998 figure includes U.S. Transportation Command's net collections of \$102.6 million.

Based on our analysis of DOD's cash plan and past trends, we believe that the Navy may have to advance bill customers during the remainder of fiscal year 1997 in order to ensure that its cash balance remains positive. Based on our review of the cash and outstanding advance billing balances for the period October 1996 through March 1997, it is too close to tell if the Army and the Air Force will have to advance bill their customers during the remainder of fiscal year 1997.

## **Working Capital Fund Operations**

The four DOD working capital funds have added surcharges to their fiscal year 1998 sales prices in order to recoup the \$1.7 billion accumulated operating loss that they expect to have at the end of fiscal year 1997. As a result of this accumulated operating loss, the customers will need \$1.7 billion in appropriated fiscal year 1998 funds so that they can reimburse the working capital funds for prior year losses rather than buy goods and services.

Our limited review of five business areas and the assumptions used to develop their fiscal year 1998 prices (which could change as fiscal year 1998 approaches) indicates that the price increases may not be enough to eliminate the \$1.7 billion accumulated operating loss. Based on the requirements in the National Defense Authorization Act for Fiscal Year 1997, we reviewed the fiscal year 1998 prices for Army depot maintenance, Air Force depot maintenance, Navy shipyards, Navy ordnance, and Navy research and development. In performing our work, we reviewed DOD's assumptions—which were finalized about 9 months before the beginning of fiscal year 1998—on the fiscal year 1998 estimated revenue, costs, operating results, and workload (direct labor hours) to

**Appendix I**  
**Working Capital Cash and Operations**  
**Management Issues**

determine if the prices are likely to (1) recover fiscal year 1998 operating costs and (2) achieve a zero accumulated operating result at the end of fiscal year 1998.

Our analysis indicates that the fiscal year 1998 prices for four of the five business areas reviewed are probably too low to recover expected fiscal year 1998 operating costs and/or recoup prior year losses by over \$300 million. The results of our work is summarized below.

**Table I.2: Estimated Impact of Fiscal Year 1998 Pricing Assumptions on End-of-Year Accumulated Operating Results**

<b>Business area</b>	<b>Estimated end-of-year accumulated operating result</b>
Army depot maintenance	Greater than \$100 million loss
Air Force depot maintenance	Greater than \$100 million loss
Navy shipyards	Between \$25 million and \$100 million loss
Navy ordnance	Between \$25 million and \$100 million loss
Navy research and development <sup>a</sup>	On target for zero accumulated operating result

<sup>a</sup>Naval surface warfare center and Naval undersea warfare center divisions only.

Our previous reports<sup>2</sup> have identified some of the primary causes of business area losses. For example, several reports have identified such long-standing and well-documented causes as (1) overly optimistic productivity assumptions, (2) unrealistic cost-reduction goals, and (3) lower-than-expected workloads. As illustrated below, we believe that the funds will incur losses in fiscal year 1998 for the same reasons.

- The Army depot maintenance business area is likely to end fiscal year 1998 with an accumulated operating loss of more than \$100 million. The expected loss is due, in large part, to significant changes made to the depot-level budget, resulting in cost-reduction goals that we believe will not be fully realized. Specifically, the Army's Industrial Operations Command proposed a composite fiscal year 1998 sales price of \$107.03 per direct labor hour, which would have been a 19-percent increase over the fiscal year 1997 price. However, this price was reduced by \$10.18 per hour by the Army Materiel Command in an effort to hold down prices and reduce the cost of depot operations. The fiscal year 1998 price reduction

<sup>2</sup>Air Force Depot Maintenance: Improved Pricing and Financial Management Practices Needed (GAO/AFMD-93-5, Nov. 17, 1992); Financial Management: Navy Industrial Fund Has Not Recovered Costs (GAO/AFMD-93-18, Mar. 23, 1993); Defense Business Operations Fund: Improved Pricing Practices and Financial Reports Are Needed to Set Accurate Prices (GAO/AIMD-94-132, June 22, 1994); Financial Management: Army Industrial Funds Did Not Recover Costs (GAO/AIMD-94-16, Nov. 26, 1993); and Navy Ordnance: Analysis of Business Area Price Increases and Financial Losses (GAO/AIMD/NSIAD-97-74, Mar. 14, 1997).

---

**Appendix I**  
**Working Capital Cash and Operations**  
**Management Issues**

---

has created a situation where expected revenues for fiscal year 1998 will be significantly less than originally expected by the depots. In order to offset this revenue reduction, the depots need to reduce operational costs by about \$68 million in fiscal year 1998. The Army was aware of the potential for significant losses and is attempting to identify areas where it can reduce its costs.

- The Air Force depot maintenance business area is likely to have an accumulated operating loss of more than \$100 million at the end of fiscal year 1998 primarily because disruptions related to on-going actions to close two Air Logistics Centers will probably prevent its workforce from achieving productivity goals that were incorporated into budget estimates for fiscal years 1997 and 1998. In fact, our review of other closure actions and the business area's actual productivity for the first 5 months of fiscal year 1997 indicates that the workforce's actual productivity is much more likely to decline significantly than to improve. For example, when the Air Force Aerospace Guidance and Metrology Center was closed in September 1996, its workforce's productivity had declined about 26 percent during the preceding 2 years. Similarly, the productivity of the Air Force depot maintenance business area's workforce for the first 5 months of fiscal year 1997 is about 6.5 percent below budgeted levels for fiscal year 1996 and 8.5 percent below the budgeted levels for fiscal year 1997.
- It is likely that the Naval shipyard business area will have an accumulated operating loss between \$25 million and \$100 million at the end of fiscal year 1998. This is due, in part, to workload delays and cancellations—two problems that have adversely affected the shipyards' operations in the past<sup>3</sup> and are likely to affect their operations in fiscal years 1997 and 1998. For example, the Navy's February 1997 budget submission was based partly on the assumption that repairs and alterations for one ship would require about 491,000 direct labor hours. However, in April 1997, about 4 months before work was scheduled to start, a major portion of this work was deferred. As a result, the workload estimate for the ship has been reduced by about 71 percent to about 144,000 direct labor hours. A Naval Sea Systems (NAVSEA) Command official stated that the shipyard cannot reduce its direct personnel and overhead costs in sufficient time to offset the lost revenue, which we estimate at about \$20 million for direct labor, overhead, and surcharges.

In another instance, our analysis of budget documents identified a change in workload estimates for a ship scheduled to begin repairs in May 1998.

---

<sup>3</sup>Defense Business Operations Fund: Improved Pricing Practices and Financial Reports Are Needed to Set Accurate Prices (GAO/AIMD-94-132, June 22, 1994).

Budget documents indicated that Navy customers planned to spend about \$16 million for ship repairs, while the shipyard planned to receive about \$36 million in revenue for working on the ship. A NAVSEA official stated that workload was reduced about 68 percent from 400,000 DLHS to 128,000 DLHS, but the change was not reflected in the workload estimates used to set fiscal year 1998 prices. In this case, the shipyard has 1 year to reduce its costs, renegotiate the workload reduction, or find additional revenue sources. Otherwise, a significant reduction in workload can result in significant losses.

- It is likely that the Navy ordnance business area will have an accumulated operating loss between \$25 million and \$100 million at the end of fiscal year 1998. As part of an initiative to restructure its ordnance business area and reduce costs, the Navy plans to drastically reduce the scope of operations at selected ordnance weapons stations. Accordingly, when it developed the prices that the business area will charge customers in fiscal year 1998, the Navy reduced weapons stations' cost estimates for overhead contract costs (for such things as utility bills and real property maintenance) from \$126 million to \$87 million, a reduction of \$39 million, or 31 percent. However, the Navy has historically underbudgeted overhead contract costs for the weapons stations. For example, the reported actual overhead contract costs exceeded budgeted costs for fiscal years 1994, 1995, and 1996 by \$33 million, \$81 million, and \$43 million, respectively. Furthermore, the Navy has not yet developed a detailed plan to achieve the budgeted cost reductions. Consequently, we believe it is very likely that the Navy ordnance weapons stations' actual overhead contract costs will exceed budgeted costs.

Because the budget process used to develop business areas' stabilized prices begins as long as 2 years before the prices go into effect, some variance between budgeted and actual operating results is inevitable. However, in some business areas, sales prices have yielded revenues that have been lower than actual costs for several years in a row. This indicates that there may be systemic problems with either the operation of the business areas or the methodology and assumptions used to estimate future costs and workloads. Until these problems are corrected, some business areas will continue to incur losses from their day-to-day operations and will need to increase future prices to recover these losses.

# Key Factors Impacting the Cost-Effectiveness of the Defense Depot Maintenance Program

DOD's depot maintenance program costs more than \$13 billion annually and involves an extensive public and private sector industrial base. Depot maintenance is one of the areas where DOD plans to achieve savings that can be used to fund shortfalls in modernization accounts. However, DOD is not achieving expected cost reductions in its depot maintenance program. In some instances, depot maintenance costs, in general, and unit repair costs, in particular, have actually increased and are expected to go higher. The waste and inefficiency in DOD's logistics system, including its depot maintenance program, is one of the key reasons we identified DOD's infrastructure activities as 1 of 24 high-risk areas within the federal government.<sup>1</sup>

A number of factors are preventing DOD from achieving expected savings in its depot maintenance costs. First, excess capacity in the industrial repair and overhaul capability of the public and private sectors contributes significantly to inefficiencies and higher costs in both sectors. Second, DOD is not achieving expected savings from outsourcing. Third, inefficiencies in DOD's supply system, along with other factors, increase the cost of material, yet, because needed parts are often not available, cause disruptions in depot maintenance operations. Also, other factors, such as inadequate information systems and readiness requirements, can influence depot inefficiencies and increase costs. To the military services' credit, each has programs underway to improve the effectiveness and efficiency of its depot maintenance activities.

## Background

Depot maintenance is a key part of the total DOD logistics system that supports millions of equipment items, over 52,000 combat vehicles, 351 ships, and over 17,000 aircraft. Depot maintenance is a vast undertaking that requires extensive shop facilities, specialized equipment, and highly skilled technical and engineering personnel (1) to perform major overhauls of weapon systems and equipment; (2) to completely rebuild parts and end items; (3) to modify systems and equipment by applying new or improved components; (4) to manufacture parts unavailable from the private sector; and (5) to program the software that is an integral part of today's complex weapon systems. This work is done in both military depots and the private sector. DOD facilities and equipment are valued at over \$50 billion. A large but unknown amount of government-owned depot plant equipment is used by private contractors—many of which are original equipment manufacturers of

<sup>1</sup>Defense Infrastructure (GAO/HR-97-7, Feb. 1997). In 1990, GAO began a special effort to review and report on the federal program areas its work identified as high risk because of vulnerabilities to waste, fraud, abuse, and mismanagement.

---

**Appendix II**  
**Key Factors Impacting the**  
**Cost-Effectiveness of the Defense Depot**  
**Maintenance Program**

---

weapons or major systems and components. DOD spends about \$13 billion—5 percent of its \$250 billion fiscal year 1997 budget—on depot maintenance activities. Over \$1 billion of this amount is procurement funding rather than operation and maintenance funding for contractor logistics support, interim contractor support, and some software maintenance.

---

**Workload and Personnel  
Have Been Reduced Since  
the Cold War Ended**

DOD's depot maintenance workload has declined significantly in recent years, in large part because of the downsizing of the military force structure and reductions in spending for new weapon systems and equipment that followed the end of the Cold War. Other factors that have contributed to this decline, and which must be shared among all potential sources of repair—both public and private—include efforts by some services to do more repairs in field-level maintenance activities and the increased reliability, maintainability, and durability of some systems and equipment.

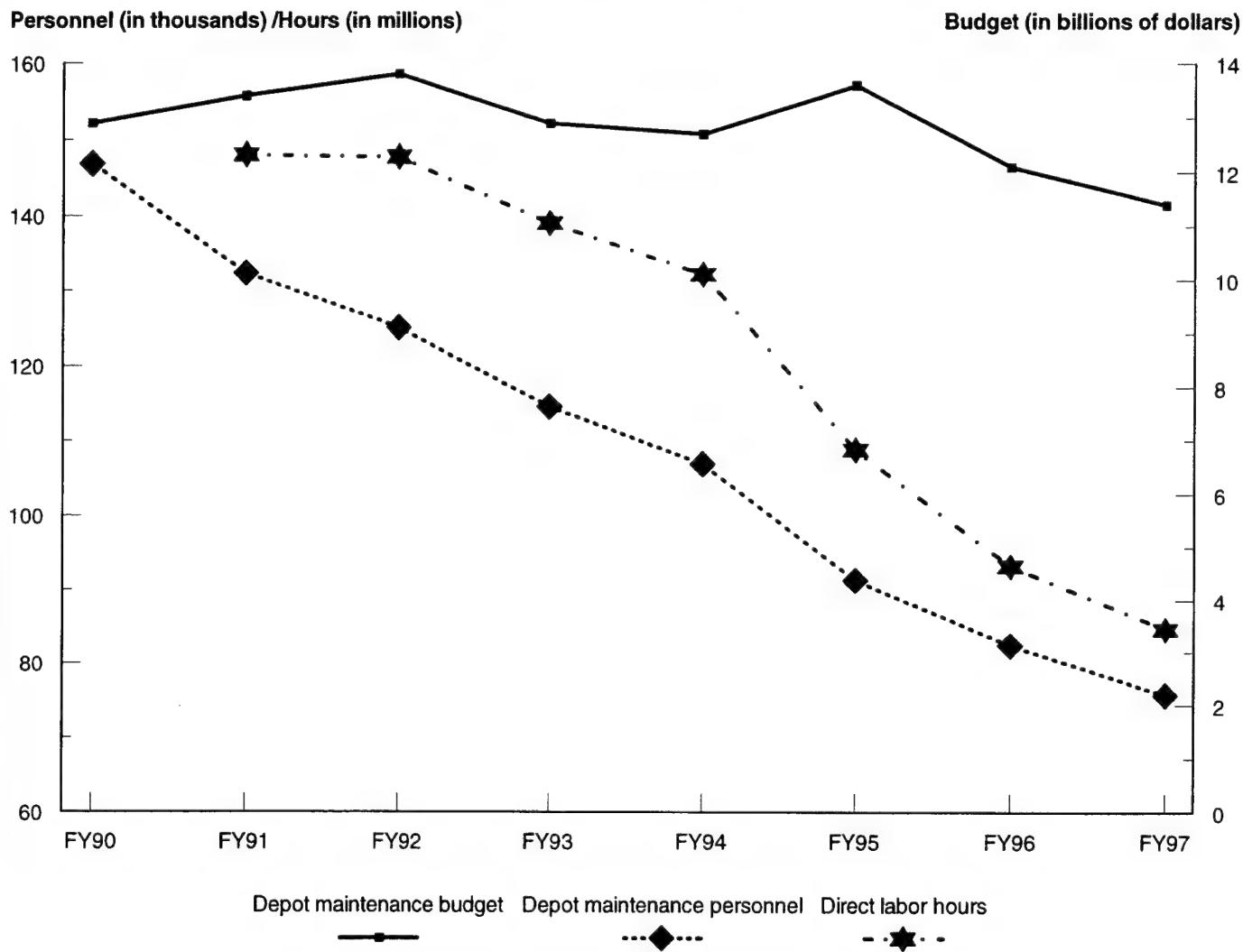
The defense depot system employs about 76,000 DOD civilian personnel, including laborers, highly trained technicians, engineers, and top-level managers. As shown in figure II.1, the number of depot maintenance personnel has been reduced by about 71,000 personnel—a 48-percent reduction since 1990. Over the same period, the organic depot maintenance workload had a similar decline of about 43 percent, while the total depot maintenance budget declined by a margin of only 12 percent.

---

**Appendix II**  
**Key Factors Impacting the**  
**Cost-Effectiveness of the Defense Depot**  
**Maintenance Program**

---

**Figure II.1: Reductions in DOD's Depot Maintenance Budget, Depot Maintenance Personnel, and Direct Labor Hours**



---

**Excess Capacity Exists in the Public and Private Sectors**

DOD has extensive excess capacity in the form of large numbers of underutilized buildings and equipment. While DOD has substantially reduced depot maintenance requirements and the number of depot maintenance personnel has been similarly reduced, DOD has not completed complementary reductions in its depot maintenance infrastructure—despite four rounds of base closures. Also, private sector production workload for new systems and equipment has generated

---

**Appendix II**  
**Key Factors Impacting the**  
**Cost-Effectiveness of the Defense Depot**  
**Maintenance Program**

---

significant excess production capacity—which the private sector estimates to be about 57 percent for military work and 56 percent for commercial work.

We identified excess capacity by determining maintenance facilities' potential for doing more work than they are programmed to accomplish. This approach, which assumes that additional trained personnel would be available to accomplish the added workloads, is the same approach that was used during the Base Realignment and Closure (BRAC) process to identify opportunities to consolidate similar workloads and to thereby, improve capacity utilization and reduce redundancies. However, DOD normally uses an approach that constrains facilities' capacity based on (1) the availability of trained personnel and the organization of work stations and (2) operation on one 8-hour shift each day, for a 5-day workweek. The private sector usually considers a maximum potential capacity utilization between 75 and 85 percent to be an efficient operating level. Using maximum potential capacity estimates, DOD is predicted to have excess capacity in fiscal year 1999 of about 50 percent. Figure II.2 shows excess capacity using both the maximum potential capacity and DOD's available capacity approach.

---

**Appendix II**  
**Key Factors Impacting the**  
**Cost-Effectiveness of the Defense Depot**  
**Maintenance Program**

---

**Figure II.2: Comparison of Depot Capacity and Workload**

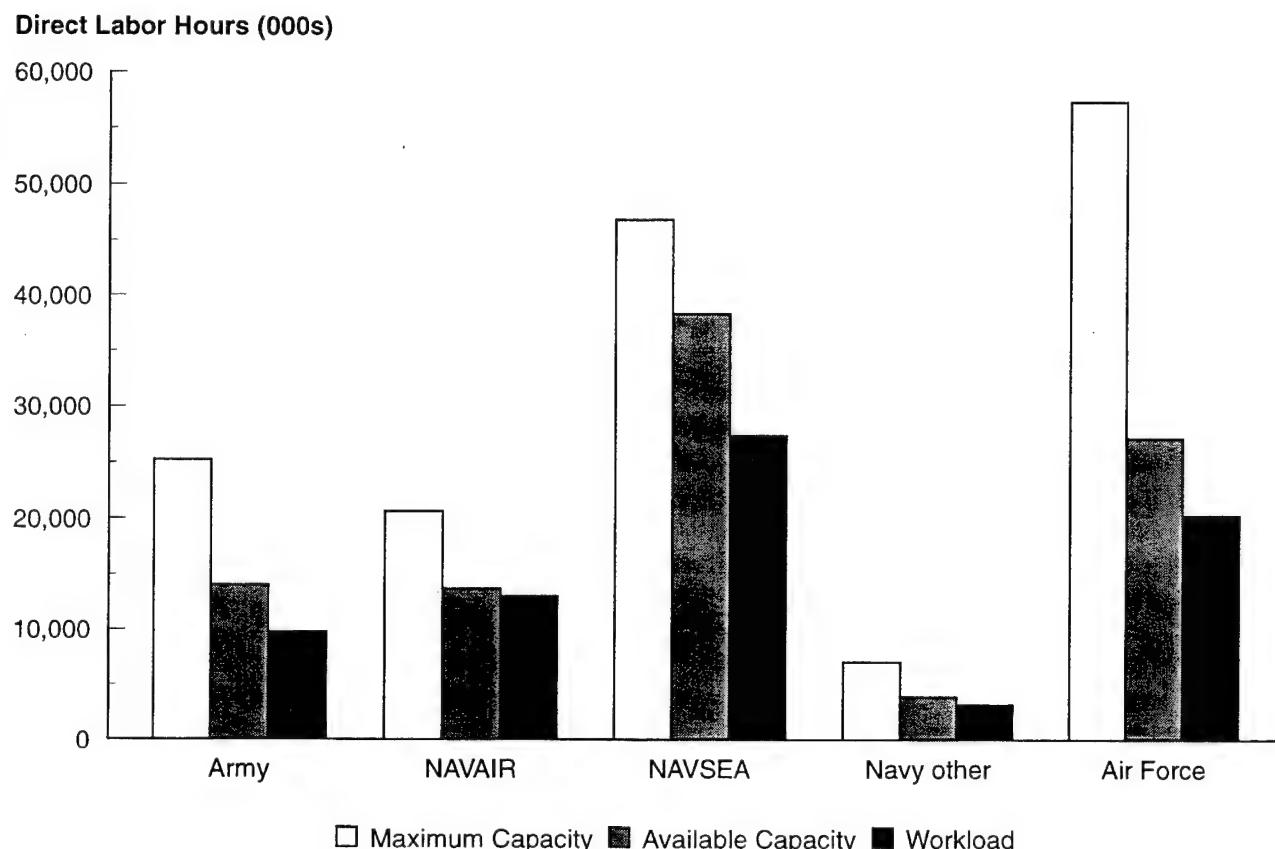


Table II.1 provides projections of each military depot's workload and excess capacity for fiscal year 1999 using maximum potential capacity and available capacity for 1999.

**Appendix II**  
**Key Factors Impacting the**  
**Cost-Effectiveness of the Defense Depot**  
**Maintenance Program**

**Table II.1: Capacity and Workload Forecasts for Defense Depots for Fiscal Year 1999**

(Direct labor hours in thousands)

Maintenance depot	Maximum potential capacity	Available capacity	Workload	Maximum capacity excess	Available capacity excess	Percentage excess of maximum capacity	Percentage excess of available capacity
<b>Naval aviation</b>							
Cherry Point	5,735	3,797	3,620	2,115	177	37	5
Jacksonville	7,158	5,572	5,355	1,803	217	25	4
North Island	7,772	4,318	4,027	3,745	291	48	7
<b>Subtotal</b>	<b>20,665</b>	<b>13,687</b>	<b>13,002</b>	<b>7,663</b>	<b>685</b>	<b>37</b>	<b>5</b>
<b>Naval shipyard</b>							
Norfolk	15,851	12,000	8,723	7,128	3,277	45	27
Pearl Harbor	8,032	5,320	3,739	4,293	1,581	53	30
Portsmouth	7,996	7,028	3,209	4,787	3,819	60	54
Puget Sound	14,919	14,000	11,717	3,202	2,283	21	16
<b>Subtotal</b>	<b>46,798</b>	<b>38,348</b>	<b>27,388</b>	<b>19,410</b>	<b>10,960</b>	<b>41</b>	<b>29</b>
<b>Other Navy</b>							
Albany	1,883	1,215	1,089	794	126	42	10
Barstow	1,563	1,037	928	635	109	41	11
Crane	2,451	974	583	1,868	391	76	40
Keyport NUWC	1,141	672	555	586	117	51	17
<b>Subtotal</b>	<b>7,038</b>	<b>3,898</b>	<b>3,155</b>	<b>3,883</b>	<b>743</b>	<b>55</b>	<b>19</b>
<b>Air Force</b>							
Oklahoma City	12,863	7,881	7,624	5,239	257	41	3
Ogden	9,005	8,371	4,596	4,409	3,775	49	45
San Antonio	15,220	1,575	1,606	- 13,614	(31)	89	-2
Sacramento	10,291	1,724	989	9,302	735	90	43
Warner Robins	9,913	7,605	5,508	4,405	2,097	44	28
<b>Subtotal</b>	<b>57,291</b>	<b>27,156</b>	<b>20,323</b>	<b>36,968</b>	<b>6,833</b>	<b>65</b>	<b>25</b>
<b>Army</b>							
Anniston	4,512	3,192	2,614	1,898	578	42	18
Corpus Christi	4,714	4,009	3,338	1,376	671	29	17
Letterkenny	3,707	213	164	3,543	49	96	23
Red River	4,684	1,534	898	3,786	636	81	41
Tobiahanna	7,606	5,091	2,736	4,870	2,355	64	46
<b>Subtotal</b>	<b>25,223</b>	<b>14,040</b>	<b>9,750</b>	<b>15,473</b>	<b>4,290</b>	<b>61</b>	<b>31</b>
<b>Total</b>	<b>157,016</b>	<b>97,129</b>	<b>73,618</b>	<b>83,398</b>	<b>23,511</b>	<b>53</b>	<b>24</b>

---

## **Workload Consolidation Provides Significant Opportunities to Reduce Costly Excess Capacity**

There are essentially two options for reducing a maintenance depot's excess capacity: downsizing-in-place or increasing the volume of workload. Downsizing-in-place by mothballing or tearing down buildings and disposing of equipment may reduce the cost of maintaining some facilities and equipment, but it does not eliminate the costly infrastructure that supports the operations of a military installation. Also, it does not promote the efficiencies that can be achieved through consolidation. During the BRAC process, it was generally the case that the most cost-effective way to reduce maintenance costs was to close some depots and to consolidate their workloads at the remaining depots or in existing private sector capacity. This approach allowed the remaining facilities to achieve production efficiencies and to spread their fixed overhead over an increased volume of work.

The defense depot system currently has about 40-percent excess capacity. With the exception of the Navy's privatization-in-place efforts, our work shows that the Navy has been the most successful at addressing the issue of closing excess industrial capacity and consolidating it to achieve economies of operation. On the other hand, the Army and the Air Force have not succeeded in making significant reductions in their excess capacity. Both services are incurring rising prices because they have too much depot infrastructure for the available workload. Further, DOD's privatization of selected depots has contributed to the excess capacity problem and ultimately will continue to drive up maintenance costs. Additionally, the Air Force plans to compete workloads at two closing depots may be more costly than redistributing the workload to other depots. Such cost increases mean that military service customers can buy less depot maintenance with available operation and maintenance dollars.

---

## **Navy Is Saving by Expeditiously Closing Aviation Depots and Shipyards, but Is Missing Savings Opportunities by Privatizing Workload**

The Navy has closed three of its six aviation depots and has consolidated most of their workloads at the three remaining depots to improve capacity utilization and reduce excess capacity. These actions, while costly and difficult, will significantly increase utilization and reduce excess capacity in the remaining three naval aviation depots. Specifically, following the 1993 BRAC Commission's approval of a recommendation to close aviation depots at Pensacola, Florida, Alameda, California, and Norfolk, Virginia, the Navy completed the closures in about 3 years versus the 6-year period allowed under the BRAC legislation. The Navy estimates that these closures and workload redistribution actions, along with interservicing actions and outsourcing some noncore workloads, will reduce its projected operating rate by about \$10 per hour. Based on a forecast of 13 million direct labor

---

**Appendix II**  
**Key Factors Impacting the**  
**Cost-Effectiveness of the Defense Depot**  
**Maintenance Program**

---

hours for fiscal year 1999, this forecast is expected to produce a savings of about \$130 million.

Our work shows that based on a maximum potential capacity and fiscal year 1999 workload forecasts, the three remaining naval aviation depots will have an average excess capacity of 37 percent, substantially lower than the other services. Further, because the Navy reallocated most of the closing depots' workloads and specialties to its remaining aviation depots, and reengineered work spaces in the process, Navy officials state that given the availability of depot maintenance personnel, capacity utilization will be about 95 percent. This represents an increase of 36 percent after the workload transition is completed.

The Navy has closed four of its eight naval shipyards, significantly reducing excess capacity in the public sector. However, excess capacity remains, particularly in nuclear capability. The amount of that excess capacity depends on how much depot level ship repair work the Navy assigns public shipyards.

**The Navy's  
Privatization-in-Place of the  
Louisville Depot Was Less  
Cost-Effective Than  
Redistributing the Workload**

The Navy's privatization of its Louisville depot was not the most cost-effective choice—it could have saved more through consolidation of workloads and improved use of capacity in remaining industrial activities.<sup>2</sup> The Louisville, Kentucky, Detachment of the Naval Surface Warfare Center, Crane Division, a depot recommended for closure by the 1995 BRAC Commission, supported the overhaul and remanufacture for naval surface ship gun and missile systems. In analyzing the cost of privatizing the Louisville workload in-place versus transferring it to another depot, the Navy estimated that the contract alternative would cost more on an annual recurring basis and the one-time cost of transferring the workload to another depot would be prohibitive. However, we found the Navy's analyses understated the annual savings of transferring the workloads to other underused facilities and overstated the one-time transfer costs.

Our analysis shows a one-time cost of \$243 million and an annual savings of \$59 million by transferring the workload. The annual savings would offset the one-time cost in about 4 years. The Navy's annual savings estimate recognized that transferring the workloads to underused facilities would reduce the overhead cost for those production units being considered for transfer. However, the per-unit savings were applied only to the workloads transferred and not to existing workloads at receiving

---

<sup>2</sup>Navy Depot Maintenance: Cost and Savings Issues Related to Privatizing-in-Place at the Louisville, Kentucky, Depot (GAO/NSIAD-96-202, Sept. 18, 1996).

---

**Appendix II**  
**Key Factors Impacting the**  
**Cost-Effectiveness of the Defense Depot**  
**Maintenance Program**

---

**Operating With Costly Excess Capacity Is Resulting in Increased Prices for Army Depots**

locations. So, while privatizing the workload in place avoided short-term cost for transitioning the workload, it is likely to be more costly for the Navy over the long run.

Based on the actions taken thus far, the Army has not effectively downsized its depot maintenance infrastructure to significantly reduce costly excess capacity.<sup>3</sup> We reported in September 1996<sup>4</sup> that tentative plans for implementing the 1995 BRAC decisions by allocating some workloads from realigned depots to remaining depots will likely achieve some reduction in excess capacity and savings at two remaining depots. However, the Army's failure to follow through with the closure of the Letterkenny Depot—by consolidating of repair workloads at other Army depots, and retaining the Red River Depot as directed by the BRAC Commission—is expected to increase costly excess capacity in the Army depots, from 42 to 46 percent over the next 3 years.

This increase is caused by several factors including: (1) a forecasted decrease in future year depot-level workload; (2) the Army's preliminary plan to retain most depot operations for missiles at Letterkenny, while privatizing or transferring to Tobyhanna Army Depot only about 14 percent of the workload; and (3) the delay in the transfer of the ground communications-electronics workload from the Sacramento depot to the Tobyhanna depot. In our September 1996 report, we recommended that DOD reassess this delay, which is costing the Army about \$24 million annually. Subsequently, on March 13, 1997, the Defense Depot Maintenance Council approved the Air Force's proposal for a 3-year workload transfer beginning in 1998 with the transfer of 20 percent of the workload in the first year, and 40 percent each in the second and third years with full-operational capability at the Tobyhanna Depot in 2001.

**Delay in Implementing Depot Closure Is Increasing Air Force Depot Maintenance Costs**

The Air Force has the most serious excess capacity problem. Delays in closing two depots identified for closure during the 1995 BRAC extends the period that the Air Force will operate five depots. During this period, each depot will operate with declining workloads, excess facilities, and personnel. This situation will increase the cost of Air Force depot maintenance operations and result in projected losses of about \$90 million in its depot operations during fiscal year 1997. Three of the six Air Force

---

<sup>3</sup>Although the Army closed the Lexington-Blue Grass, Sacramento, and Tooele Army depots, excess capacity was still 42 percent in 1995.

<sup>4</sup>Army Depot Maintenance: Privatization Without Further Downsizing Increases Costly Excess Capacity (GAO/NSIAD-96-201, Sept. 18, 1996).

---

**Appendix II**  
**Key Factors Impacting the**  
**Cost-Effectiveness of the Defense Depot**  
**Maintenance Program**

---

depots that existed in 1992 were recommended for closure during the 1993 and 1995 BRAC processes. The Air Force has opted to privatize-in-place one of these depots and is in the process of using public-private competitions to decide where the workloads from the other two closing depots will be performed.

---

## **BRAC Decisions and How DOD Is Approaching Implementation**

---

Despite major force structure reductions and significant excess capacity in the Air Force depot maintenance system, none of the Air Force's five large, multicommodity logistics centers or their maintenance depots were recommended by DOD for closure during the first four BRAC rounds. These five depots have about 57 million direct labor hours of capacity to accomplish about 32 million direct labor hours of work, leaving about 26 million hours of excess capacity—or about 45 percent. Also, the Air Force maintenance depots' workloads are projected to decline to about 20 million direct labor hours of work in 1999. At this workload level, the Air Force depots would have about 65 percent unused capacity. Although the commission identified depots at the Sacramento and San Antonio centers for closure during the 1995 BRAC process, the executive branch, citing readiness, up-front costs, and potential effects on the local community, indicated that these workloads should be privatized-in-place or in the local communities. Subsequently, DOD announced that it will use public-private competitions as a means for determining who will perform the workload from the closing depots.

In December 1996, we reported that if the remaining depots do not receive additional workloads, they are likely to continue to operate with significant excess capacity and to become more inefficient and expensive as workloads continue to dwindle due to downsizing and outsourcing initiatives.<sup>5</sup> Our analysis indicates that redistributing 8.2 million direct labor hours of work from the two closing Air Force depots to the three remaining depots would (1) reduce the projected excess capacity in 1999 from about 65 percent to about 27 percent, (2) lower the hourly rates by an average of \$6 at receiving locations by spreading fixed-cost over a larger workload, and (3) save as much as \$182 million annually as a result of economies of scale and other efficiencies. This estimate was based on a workload redistribution plan that would relocate only 78 percent of the available hours to Air Force depots. About one-half of the remaining 22 percent was captured in savings the Army projected would be achieved through consolidating ground communications and electronics workload

---

<sup>5</sup>Air Force Depot Maintenance: Privatization-in-Place Plans Are Costly While Excess Capacity Exists (GAO/NSIAD-97-13, Dec. 31, 1996).

---

**Appendix II**  
**Key Factors Impacting the**  
**Cost-Effectiveness of the Defense Depot**  
**Maintenance Program**

---

at Tobyhanna Army depot. Table II.2 shows an overview of the projected savings achievable through consolidation and increased use of capacity in the remaining three Air Force depots.

**Table II.2: Potential Savings From Air Force Depot Consolidation**

Depot location	Direct labor hours	Labor/overhead rates	Cost
<b>Before consolidation</b>			
Oklahoma City	7,122,421	\$59.11	\$421,006,305
Ogden	4,939,623	\$65.47	323,397,118
Warner Robins	6,763,218	\$59.55	402,749,632
Sacramento	3,222,409	\$63.81	205,621,918
San Antonio	5,000,190	\$58.24	291,211,066
<b>Total cost</b>			<b>\$1,643,986,039</b>
<b>After consolidation</b>			
Oklahoma City	12,214,902	\$50.22	\$613,432,378
Ogden	6,626,348	\$59.68	395,460,449
Warner Robins	8,206,611	\$55.17	452,758,729
<b>Total cost</b>			<b>\$1,461,651,556</b>
<b>Total potential savings</b>			<b>\$182,334,483</b>

According to management officials at the three remaining centers, it would cost about \$475 million to absorb all of the Sacramento and San Antonio workloads. Using our estimate of \$182 million in projected annual consolidation savings, net savings could occur within 2.6 years of the consolidation.<sup>6</sup> The Air Force believes that the competition process will demonstrate if outsourcing or workload redistribution is the best value.

---

## Material Cost Increases Are Generating Losses for the Depot Maintenance Activity Group

While material costs vary for different commodities and depot maintenance actions, the cost of repairable and consumable parts is a significant portion of the cost of depot maintenance activities and of the composite rates charged depot maintenance customers. For this reason, inefficiencies in the DOD supply system and inaccurate information about the quantity and price of spare and repair parts required in the repair processes may lead to increased costs and losses in the depot maintenance capital fund. For example, about 40 percent of Air Force depot maintenance costs are material costs. During fiscal year 1997, Air Force depots are experiencing a 9-percent loss due to increased cost of

---

<sup>6</sup>In addition, the Army estimates that the BRAC Commission mandated transfer of about 1.2 million hours of ground communications workload from the Sacramento depot to the Tobyhanna Army Depot will save an additional \$24 million annually.

---

**Appendix II**  
**Key Factors Impacting the**  
**Cost-Effectiveness of the Defense Depot**  
**Maintenance Program**

---

material. The total effect of awaiting parts on the depot repair cycle process is not known because its measurement is said to be incomplete and inconsistent. However, one study reported that partial data indicates that it is a pervasive and serious problem—in one case, as much as 12 percent of an annual negotiated program was not completed because parts were not available.<sup>7</sup>

**Inventory Management  
Inefficiencies to  
Contribute to  
High-Maintenance Costs**

Since 1992, we have reported that DOD had wasted billions of dollars on excess supplies, including spare and repair parts used in the depot maintenance repair process. We reported that the problem resulted because inherent in DOD's culture was the belief that it was better to overbuy items than to manage with just the amount of stock needed. Had DOD used effective inventory management and control techniques and modern commercial inventory management practices, DOD would have had lower inventory levels and would have avoided the burden and expense of storing excess inventory. In a 1995 report, we stated that managing DOD's inventory presented challenges that partially stemmed from the downsizing of the military forces.<sup>8</sup> We reported that DOD needed to move aggressively to identify and implement viable commercial practices and provide managers with modern, automated accounting and management systems to better control and monitor its inventories.

More recently, we reported that while DOD has clearly had some success in addressing its inventory management problems, much remains to be done.<sup>9</sup> DOD has made little progress in developing the management tools needed to help solve its long-term inventory management problems. It has not achieved the economies and efficiencies hoped for from the Defense Business Operations Fund and the Corporate Information Management initiatives. As a result of the lack of progress with some of the key initiatives, it has become increasingly difficult for inventory managers to manage DOD's \$69 billion spare and repair parts inventory efficiently and effectively, including determination of budget requirements. Large amounts of unneeded inventory, inadequate inventory oversight, overstated requirements, and slowness to implement modern commercial practices are evidence of the lack of progress. For example:

---

<sup>7</sup>The Depot Repair Cycle Process: Opportunities for Business Practice Improvement, LG406MR1, May 1996, The Logistics Management Institute.

<sup>8</sup>High-Risk Series: Defense Inventory Management (GAO/HR-95-5, Feb. 1995).

<sup>9</sup>High-Risk Series: Defense Inventory Management (GAO/HR-97-5, Feb. 1997).

---

**Appendix II**  
**Key Factors Impacting the**  
**Cost-Effectiveness of the Defense Depot**  
**Maintenance Program**

---

- In our 1995 report, we stated that DOD's 1994 strategic plans for logistics called for improving asset visibility in such areas as in-transit assets, retail-level stocks, and automated systems. Although the asset visibility plans were to be completely implemented by 1996, DOD currently does not project to complete the total asset visibility initiative until 2001. Further, the lack of adequate visibility over operating materials and supplies substantially increases the risk that millions of dollars will be spent unnecessarily.
- In 1992 and 1995, we reported that DOD had problems in accurately determining how much inventory it needs to buy. Our recent work shows that this continues to be the case. For example, we reported that DOD had made limited progress in reducing acquisition lead times and that DOD could reduce its lead time by 25 percent over a 4-year period and save about \$1 billion.<sup>10</sup>
- We have found that despite DOD's huge investment in spare and repair parts, depots often do not have the spare and repair parts to perform required maintenance. For example, we recently reported that inadequate consumable parts that are used in large quantities to repair aircraft components were the primary cause for repair delays at the Corpus Christi Army depot.<sup>11</sup> Also, we found that not having required parts has delayed the installation of the night vision modification for the F-16 aircraft because required parts had not been procured—resulting in a production loss of 31,000 hours. According to Air Force officials, if this work had been contracted out, the contractor would file a claim to be reimbursed for lost production time where nonavailability of parts impacted contractor performance. As a result of this and other production changes, Ogden officials stated the depot is currently 126,000 hours below planned 1997 production levels, causing a net loss of about \$5 million.

---

**Inadequate Control of  
Government-Furnished  
Stocks Can Contribute to  
Losses in Contract Depot  
Maintenance**

Long-standing problems in managing government-furnished property, government-furnished equipment, and government-furnished material are adding millions of dollars to DOD's depot level maintenance contracting costs and resulting in losses in the Air Force's contract maintenance portion of the working capital fund.

DOD buying commands can choose to provide contractors property, equipment, and materials for use in repairing items. Contractors are to

---

<sup>10</sup>Defense Supply: Acquisition Leadtime Requirements Can Be Significantly Reduced  
(GAO/NSIAD-95-2, Dec. 1994).

<sup>11</sup>Inventory Management: The Army Could Reduce Logistics Costs for Aviation Parts by Adopting Best Practices  
(GAO/NSIAD-97-82, Apr. 15, 1997).

---

**Appendix II**  
**Key Factors Impacting the**  
**Cost-Effectiveness of the Defense Depot**  
**Maintenance Program**

---

report annually to the services the amount of property and equipment they have on hand that was furnished by the commands, and the commands are to reconcile these reports with their records. Material for use in the repair of items is to be furnished timely and monitored for proper use. Failure to provide government-furnished material in a timely manner can result in a claim for compensation from the contractor. Further, since the Air Force, unlike the other military services, includes contract depot maintenance in its working capital fund, increased costs over what is budgeted will lead to losses in the working capital fund.

**Management and Accountability Has Not Always Been Effective**

DOD's problems in managing and accounting for government-furnished stocks have been long-standing. For example, in 1993, the Secretary of the Army requested the Army Audit Agency to examine controls over government-furnished property because we identified this as a weakness during our audit of the Army's fiscal year 1991 financial statements. The Army Audit Agency found many problems Army-wide, including the inability to determine the accuracy of contractors' reports. For instance, at the Missile Command, contractors reported having about \$1.3 billion in government-furnished property for which the command's annual summary report of property in the custody of contractors did not identify. In April 1996, the Air Force Audit Agency found similar problems at Warner Robins Air Logistics Center with government-furnished property financial statement balances that could have been misstated by up to \$2.3 billion. The following are three cases we found where inadequate control over government-furnished material resulted in increased depot maintenance costs:

- The Warner Robins Air Logistics Center experienced a \$113-million cost overrun on F-15 maintenance work. Since the early 1980s, the Center has contracted with Korean Airlines and Israel Air Industries for maintenance of F-15's overseas. In 1989, the Center began experiencing cost overruns, which it determined were directly related to government-furnished material. Our review shows that the F-15 program managers had sufficient information about the government-furnished material issue from reports that were periodically generated from the Center's automated systems. However, no actions were taken to resolve the government-furnished material problem until the contract was being administratively closed out in 1996. The Center maintains that some of the problems have been corrected but that others have not. We observed the government-furnished material status on the current F-15 contract and found that a similar pattern of cost overrun is occurring.

---

**Appendix II**  
**Key Factors Impacting the**  
**Cost-Effectiveness of the Defense Depot**  
**Maintenance Program**

---

- In another case, the Air Force paid \$24.9 million to settle claims related, in part, to its failure to provide the contractor, PEMCO, timely government-furnished material. PEMCO had filed claims for compensation between November 1994 and June 1996 for alleged problems related to programmed depot maintenance for the KC-135 aircraft and had planned to file additional claims. In September 1996, the Air Force and PEMCO reached a "global settlement" of \$24.9 million where the Air Force conceded fault in several areas, including the failure to provide material on time.
- According to program office officials, increased costs resulting from the contractor's use of government-furnished material is one of several factors leading to losses resulting from the privatization of the Aerospace Guidance and Metrology Center (AGMC) in Newark, Ohio.

---

## Overly Optimistic Assumptions of Cost Savings From Outsourcing Could Lead to Further Price Increases

### AGMC Outsourcing Illustrates How Overly Optimistic Saving Assumptions Lead to Losses

Unanticipated losses in outsourced workloads are another factor influencing cost growth in the depot maintenance program and losses in the working capital fund. Reported projections of 20- to 40-percent savings from outsourcing depot maintenance and other logistics operations have influenced DOD assumptions that outsourcing will lead to significant savings. Because assumptions about outsourcing savings were overly optimistic, expected savings are not being achieved.

The Air Force reported to the Congress that the privatization of the AGMC would result in savings, and it did not budget for increased costs for post-privatization operations. Customers of the privatized facility—the Boeing Guidance Repair Center—are not paying enough to recoup the costs of ongoing repair work and the Air Force Working Capital Fund is therefore expected to incur losses during fiscal year 1997. The Air Force has recognized that costs will be higher during fiscal year 1998 and is increasing its prices by \$19 million. Nonetheless, a just released Air Force Materiel Command study, which was undertaken at our request, states that privatized repair operations for missile and aircraft inertial navigation systems could range between about \$9 million and \$32 million—a 12- to 47-percent increase—with a most likely increase of \$17.1 million.

---

**Appendix II**  
**Key Factors Impacting the**  
**Cost-Effectiveness of the Defense Depot**  
**Maintenance Program**

---

**Assumptions Regarding  
Outsourcing Savings Are  
Based on Competition, but  
Many Current Depot  
Maintenance Contracts Are  
Sole Source**

Facing large shortfalls in its modernization accounts, DOD plans to reduce costs and generate savings for modernization through the outsourcing of support activities, including depot maintenance. DOD's projected savings level is based largely on estimates made through studies by the Commission on Roles and Missions (CORM) and Defense Science Board that outsourcing depot maintenance and other activities will save 20 to 40 percent. Our review shows that savings of this magnitude are questionable for several reasons. For example (1) projections were based on the Office of Management and Budget Circular A-76 competitions between the public and private sector, with the public sector winning about half of the competitions; (2) the activities being competed were simple, commercial activities like mowing grass, maintaining buildings, and operating motor pools where requirements could readily be identified and for which there were many private sector offerors who could compete for the work; and (3) savings estimates were estimated, not actual, and where audited, savings estimates were not achieved. While we believe savings may be achieved from outsourcing some depot maintenance workloads, our analysis indicates that little or no savings would result from outsourcing depot maintenance in the absence of competition.

However, our April 1996 testimony and July 1996 CORM report noted that much of the depot work contracted to the private sector was awarded sole source and that obtaining competition for remaining noncore workloads may be difficult and costly.<sup>12</sup> For example, to test for the extent of competition, we sampled 240 contracts, totaling \$4.3 billion, that 12 DOD buying commands had open during 1995. Of these 240 contracts, 182, about 76 percent, were awarded on a sole-source basis—about 45 percent of the total dollar value.

Recently, we asked the DOD buying commands to classify as competitive or sole source all the new contracts awarded from the beginning of fiscal year 1996 to date. As shown in table II.3, of the 15,346 contracts totaling \$2.2 billion, 13,930—about 91 percent—were awarded sole source. The sole-source contracts totaled about \$1.5 billion, or about 68 percent of the total dollars awarded.

---

<sup>12</sup>Defense Depot Maintenance: Privatization and the Debate Over the Public-Private Mix (GAO/T-NSIAD-96-148, Apr. 17, 1996) and Defense Depot Maintenance: Commission on Roles and Mission's Privatization Assumptions Are Questionable (GAO/NSIAD-96-161, July 15, 1996).

**Appendix II**  
**Key Factors Impacting the**  
**Cost-Effectiveness of the Defense Depot**  
**Maintenance Program**

**Table II.3: DOD Depot Maintenance Contracts Awarded From Year 1996 to Date**

Command	Competitive		Sole source		Total	
	Number	Value	Number	Value	Number	Value
Army	2	\$1	40	\$540	42	\$541
Air Force	1,263	443	1,268	336	2,531	779
Navy	151	253	12,622	638	12,773	891
<b>Total</b>	<b>1,416</b>	<b>\$697</b>	<b>13,930</b>	<b>\$1,514</b>	<b>15,346</b>	<b>\$2,211</b>

Table II.4 compares the services' use of competition for contracts we sampled in 1995 with that used in contracts awarded since the beginning of fiscal year 1996. The Air Force had the greatest percent of competitive contracts in 1995 and 1996. The Army's use of competition decreased, and the Navy's use was low for both periods.

**Table II.4: DOD's Use of Competition for Depot Maintenance Work**

Service	Competitive contracts open In 1995		Competitive contracts awarded from FY 1996 to date	
	Total number	Total value	Total number	Total value
Army	23	53	5	.2
Air Force	39	62	50	57
Navy	8	39	1	28

**Competition Cited as Reason for Sole-Source Awards**

Our review also showed that, for existing weapon systems, obtaining a competitive market may be costly for DOD because it has not acquired the technical data rights for many of its weapon systems. In examining the reasons for sole-source contracting, we observed that the justification most often cited was that competition was not possible because DOD did not own the technical data rights for the items to be repaired. Officials from the DOD buying commands told us that DOD would have to make costly investments to promote full and open competition for many of its weapon systems. Also, we found that savings through competition may be adversely affected by private businesses that choose not to compete for maintenance workloads that have (1) small volumes, (2) obsolete technology, (3) irregular requirements, and (4) unstable funding. DOD may be able to encourage more competition through bundling common work and offering contracts with terms and conditions such as multiple options and multiyear performance periods.

---

**Appendix II**  
**Key Factors Impacting the**  
**Cost-Effectiveness of the Defense Depot**  
**Maintenance Program**

---

## Other Factors Effecting Depot Inefficiencies and Costs

In addition to the factors we have already discussed, there are a number of others that impact the efficiency and cost of depot maintenance operations. In particular, our work shows that: (1) lengthy depot repair cycles are costly, (2) DOD has been unsuccessful in implementing effective information systems to adequately support its depot maintenance, and (3) defense depots must support inefficient workloads and changing budgets and requirements of their customers. It is important to note that each of the services has initiated programs to improve their depot maintenance operations. However, while these programs are concentrating on key problems, it is too soon to assess effectiveness of these initiatives.

---

### Reducing Repair Cycle Days Can Reduce Costs

Reducing the length of the depot repair cycle process is of vital importance in reducing costs. Reducing repair cycle time reduces the number of items that must be purchased to support weapon systems and equipment. One study estimated that for depot level reparables, the dollar-weighted organic/contractor depot repair cycle time is 86.8 days, with a resultant repair cycle level investment requirement of \$4.4 billion. That requirement would be decreased an average of \$51 million for each day the repair cycle time is reduced.<sup>13</sup>

In our April 1997 report, we stated that the Army's efforts to improve its logistics pipeline for aviation parts and reduce logistics costs could be enhanced by incorporating best practices we have identified in the private sector. The Army's current repair pipeline, characterized by a \$2.6-billion investment in aviation parts, is slow and inefficient. For example, in one case we examined, it took the Army four times longer than a commercial airline to ship a broken part to the depot and complete repairs. Also, for 24 different types of items examined, we calculated it took the Army an average of 525 days to repair and ship the parts to field units. The Army estimates only 18 days (3 percent) should have been needed to repair the items. The remaining 507 days (97 percent) were used to transport or store the parts or were the result of unplanned repair delays. Because of this lengthy pipeline time, the Army buys, stores, and repairs more parts than would be necessary with a more efficient system. We reported that implementing industry best practices can be used to achieve significant improvements and cost reduction. These practices are the prompt repair of items, the reorganization of the repair process, the establishments of partnerships with key suppliers, and the use of third-party logistics

---

<sup>13</sup>The Depot Repair Cycle Process: Opportunities for Business Practice Improvement, LG406MR1, May 1996, Logistics Management Institute.

---

**Appendix II**  
**Key Factors Impacting the**  
**Cost-Effectiveness of the Defense Depot**  
**Maintenance Program**

---

services. Our work in the Navy and the Air Force depot activities found similar opportunities for improvement exist.<sup>14</sup>

---

**Timely and Accurate  
Information Systems Are  
Essential to Improve Depot  
Operations and Costs**

Current information systems used to manage the depot repair process do not provide timely and accurate information essential for improving depot operations and reducing costs. In 1989, DOD established the Corporate Information Management Initiative to dramatically improve the way DOD conducts business, primarily by adopting best business practices used in the public and private sectors and building the automated information systems to support those improved practices. In November 1992, DOD adopted a plan for identifying the best operational logistics information systems and deploying them among all the services and defense agencies. This strategy failed to produce the dramatic gains in efficiency and effectiveness that DOD anticipated.

Our review of depot maintenance systems envisioned under this plan found that even if the migration effort was successfully implemented as envisioned, the planned depot maintenance standard system would not dramatically improve depot maintenance operations in DOD.<sup>15</sup> DOD planned to invest more than \$1 billion to develop a depot maintenance standard system that would achieve less than 2.3 percent in reduced operational costs over a 10-year period. Such incremental improvement is significantly less than the order-of-magnitude improvements DOD has said could be achieved through reengineering business processes—efforts that were being postponed until after the development of the standard systems.

DOD subsequently terminated the Depot Maintenance Information System and the depots had to write off their investment in this effort. Air Force depots wrote off about \$34 million of their investment in this program in 1996, adding to their depot activity group losses that year.

---

<sup>14</sup>Inventory Management: Adopting Best Practices Could Enhance Navy Efforts to Achieve Efficiencies and Savings (GAO/NSIAD-96-156, July 12, 1996) and Best Management Practices: Reengineering the Air Force's Logistics System Can Yield Substantial Savings (GAO/NSIAD-96-5, Feb. 21, 1996).

<sup>15</sup>Defense IRM: Strategy Needed for Logistics Information Technology Improvement Efforts (GAO/AIMD-97-6, Nov. 14, 1996).

---

**Appendix II**  
**Key Factors Impacting the**  
**Cost-Effectiveness of the Defense Depot**  
**Maintenance Program**

---

**Organic Depots' Mission Is  
to Support Military  
Customers' Programs,  
Which Contain Some  
Inherent Inefficiencies**

While the organic depots can and must implement improvements to reduce the cost of their depot maintenance operations, they have some mission requirements that are inherently inefficient. However, performing these missions is necessary to meet the readiness and support needs of their customers. For example:

- Many of the depot level repairable components that organic depots must be prepared to repair have uncertain and infrequent repair requirements. For example, a contingency response or special training exercises may require expedited and/or increased repair needs to support key weapon systems and equipment. Likewise, depots are required to maintain repair capabilities to support end items and components that may be obsolete, are maintained in low quantities and/or have infrequent, sporadic requirements. Neither of these situations are conducive to supporting low-cost operations, but are necessary to meet the readiness needs of the customer.
- Changing operational requirements and changing budget requirements frequently result in changes to the production schedules. Production changes would result in losses when the volume of work declines or the mix of resulting work generates less revenue than planned. As previously discussed, budgets are developed 2 years in advance. Depot officials stated that changes in the production schedule that impact projected versus actual revenues are significant.

**All Services Have  
Initiatives to Improve  
Depot Operations**

Each of the military services have individual programs designed to address some depot maintenance inefficiencies. We have recommended such actions and are encouraged by these efforts. While it is too early to assess the specific results, our initial impression is that the programs are focusing on key problem areas, such as reducing repair cycle time. Some examples of the services improvement initiatives over the past few years include:

- The concept of regional maintenance in the Navy focuses on properly sizing the shore maintenance infrastructure to support a smaller naval force while maintaining the Fleet in a high state of readiness.
- The Air Force's Lean Logistics Program is designed to maximize operational capability by using high velocity transportation and just-in-time stockage principles to shorten cycle times, reduce inventories and cost, and shrink the mobility footprint, and providing flexibility to manage mission and logistics uncertainties.

---

**Appendix II  
Key Factors Impacting the  
Cost-Effectiveness of the Defense Depot  
Maintenance Program**

---

- The Integrated Sustainment Maintenance Program in the Army regionalizes the repair of components to achieve efficiencies and cost savings.
- The Marine Corps' Precision Logistics Program is a change in culture and a pursuit of smart business practices regarding the speed and accuracy of information, speed and fluidity of distribution, and reduction in support cycle times.

---

Mr. Chairman, this concludes our statement. We would be pleased to answer any questions you or the Subcommittee may have at this time.

---

### **Ordering Information**

**The first copy of each GAO report and testimony is free. Additional copies are \$2 each. Orders should be sent to the following address, accompanied by a check or money order made out to the Superintendent of Documents, when necessary. VISA and MasterCard credit cards are accepted, also. Orders for 100 or more copies to be mailed to a single address are discounted 25 percent.**

**Orders by mail:**

**U.S. General Accounting Office  
P.O. Box 6015  
Gaithersburg, MD 20884-6015**

**or visit:**

**Room 1100  
700 4th St. NW (corner of 4th and G Sts. NW)  
U.S. General Accounting Office  
Washington, DC**

**Orders may also be placed by calling (202) 512-6000 or by using fax number (301) 258-4066, or TDD (301) 413-0006.**

**Each day, GAO issues a list of newly available reports and testimony. To receive facsimile copies of the daily list or any list from the past 30 days, please call (202) 512-6000 using a touchtone phone. A recorded menu will provide information on how to obtain these lists.**

**For information on how to access GAO reports on the INTERNET, send an e-mail message with "info" in the body to:**

**info@www.gao.gov**

**or visit GAO's World Wide Web Home Page at:**

**<http://www.gao.gov>**

United States  
General Accounting Office  
Washington, D.C. 20548-0001

Bulk Rate  
Postage & Fees Paid  
GAO  
Permit No. G100

Official Business  
Penalty for Private Use \$300

Address Correction Requested

98611637/T-NSIAD/AIMD-97 N/001  
Cynthia J Barnes  
Nat'l Aeronautics & Space Admin  
Ctr for Aerospace Info  
800 Elkridge Landing Rd  
LINTHICUM HEIGHTS MD 21090-2903

